Plant Pest Control Div.
Annual Report
'70-'71

PLANT PEST CONTROL DIVISION

Introduction

The duties of the Plant Pest Control Division are the protection of the agricultural, horticultural and forestry interests of the State from serious insect and plant disease pests that are newly introduced or are uncontrollable by the individual. Oak wilt, white pine blister rust, stem rust of wheat and cereal leaf beetle are examples. Much of the work of this Division is in cooperation with the United States Department of Agriculture, Agricultural Research Service and Forest Service. Formal agreements with these agencies decide the nature of the cooperative work.

Surveys are made to determine if new diseases or insects have invaded the State. Another purpose of the surveys is to ascertain the degree of infestation of existing diseases and other pests.

Nurseries are registered and inspected and if found to be free of injurious pests are so certified. Plant material may be quarantined until such time as existing pest conditions are controlled and the plants are free from pests and are safe to be moved.

The Division also registers and inspects apiaries so that serious bee diseases may be controlled. Laws relating to beekeeping are enforced and educational programs designed to promote beekeeping are carried out.

In addition, the Division staff assists the citizens of the State in solving their pest problems by making personal visits or phone calls, by appearing on radio and television to discuss pest problems or program activities, by speaking to garden and civic clubs, participating in State and local fairs and by participating in several youth camps and nature tours.

New brochures designed to assist West Virginia citizens in understanding insect and plant diseases were prepared during the year. These include "Spiders in West Virginia," "Some Common Household Insects," "The Japanese Beetle in West Virginia," "Guide for Diagnosis of Brood Diseases of the Honey Bee," and "Swarming of Honey Bees." Over 3,000 pieces of literature dealing with agriculture, horticulture, plant pests, etc., were sent to nearly 1,400 persons requesting help from the Division. This is in addition to the monthly Nursery Newsletter, Beekeeping Newsletter and Forest Insect and Disease Newsletter.

APIARY INSPECTION

In a continuing effort to eliminate the serious diseases of bees, particularly American Foulbrood, from the State 6,574 colonies were inspected this year. One hundred sixty-seven of these colonies were found to be infected with American Foulbrood and were destroyed. Drug therapy was approved for 16 colonies showing slight infection.

In Tyler, Nicholas and Wirt Counties the disease is particularly heavy. Most of the 167 diseased colonies have been found in this area. In addition, many dead colonies were found and it is presumed that their loss was caused by American Foulbrood. This area has never had adequate inspection service and many beekeepers continue to hive bees in box hives and gums and as a result fail to reap any benefit from their bees.

There are now 1,833 beekeepers registered with over 20,400 colonies of bees.

The production of honey and bees wax and the rearing of bees for pollination services are still undeveloped agricultural resources in West Virginia. To promote beekeeping and to teach modern and efficient methods of keeping bees, schools were held in several areas last year. A Newsletter was distributed to all known West Virginia beekeepers and several education pamphlets on beekeeping were prepared and distributed to the State's beekeepers. A State-wide Beekeepers organization was formed and the State Bee Specialist, Earl P. Cochran, was elected President.

The goal of the inspection and educational programs conducted by this Division is to assist the State beekeepers in finally reaching the goal of a one million dollar a year honey crop - a definite possibility in West Virginia - and to have available an ample number of strong bee colonies for pollination purposes.

BIOLOGICAL INSECT CONTROL

Increasing concern about the environmental quality has focused attention on pesticide use and on the relationship between these chemicals and environmental health. Believing that an integrated program of insect control, involving not only the safe use of pesticides and regulatory quarantines relied upon in the past, but also involving the use of biological controls to be a sound concept, this Division has initiated a program of biotic pest control.

This year, in addition to the bacterial disease of Japanese beetles known as Milky Disease and the Tifia wasp parasite of this insect which we have been utilizing for many years, we have attempted to introduce several predators of the Cereal leaf beetle, a serious insect pest of oats, wheat and other grasses. With the cooperation of the U. S. Department of Agriculture, ARS, Parasite Rearing Station in Niles, Michigan, releases of several small wasp-like insect species that parasitize the adult, larvae, or the eggs of the cereal leaf beetle were made in areas where cereal leaf beetle populations are reaching the economic level.

Tetrastichus julis, Diaparsis carinifer, Lemophagus curtus and Anaphes flavipes were released in several of the Ohio River Counties.

In addition, plans were to import a weevil that has been used with good results in Virginia and elsewhere as a control agent for the Musk Thistle, a particularly serious pasture weed now spreading in our eastern counties. These weevils were not introduced this year because the shipment to the USDA Parasite Introduction Facility in California suffered almost complete loss in handling.

The probability of the Gypsy moth becoming established in the near future in West Virginia makes it essential that we learn to use not only pesticides and quarantines but biological control agents as well.

COOPERATIVE ECONOMIC INSECT SURVEY
(Federal-State Cooperative)

In cooperation with the United States Department of Agriculture, the Cooperative Economic Insect Survey in West Virginia utilized seven black light insect traps in addition to making numerous sweep net collections and plant damage surveys to record and evaluate insects of economic importance to the agricultural community. No unusual outbreaks of pest insects affecting agriculture were observed this year. Reports detailing the insect observations that were made were sent to the USDA for incorporation in the nationwide report (C.E.I.R.) and for evaluation.

In conjunction with this program the Pest Identification Lab received over 300 specimens of insects from West Virginia citizens desiring identification and, in some cases, control recommendations.

The West Virginia Insect Collection continued to be expanded with over 75 new insect species being added. Of these, 18 were new State or County records.

In cooperation with the West Virginia University Extension Service three Pest Identification Clinics were held in Wheeling, Martinsburg, and Charleston. Specialists from the University and from this Division were available to meet with any citizen to identify and discuss pest problems.

FOREST INSECT AND DISEASE SURVEY
(Federal-State Cooperative)

In cooperation with the United States Forest Service, a continual surveillance of the insect and plant disease conditions affecting our vast forested areas is maintained. Service Foresters of the Department of Natural Resources, Forestry Division, assist in this task by reporting on conditions in their local areas and when the reports or submitted insects seem to warrant it, the Division's Forest Entomologist makes on the spot appraisals of the condition in question.

This year no insect or disease conditions required control programs, however several pests did do considerable damage. Forest tent caterpillar and the oak leaf tier complex did the most damage, causing light to

moderately heavy defoliation over approximately 300,000 acres of timber land. The Forest tent caterpillar, unlike several serious defoliators not now known to occur in the State, seldom causes extensive damage for two years in a row. The oak leaf tier complex is confined to a relatively small area in several of the eastern counties.

A detailed Annual Summary of insect and disease conditions is published on a calendar year basis as well as nine newsletters which are distributed to foresters and other interested citizens.

GYPSY MOTH SURVEY
(Federal-State Cooperative)

Approximately 3,000 sex lure traps were in place by July 1, 1970 in the eastern and northern counties. These traps were examined by State and Federal personnel and removed by the end of August. No male moths were recovered.

In June of 1971 a similar number of traps baited with the new pheremone, Disparlure, were placed in the same counties as a part of the 1971 survey.

The Gypsy moth continues to spread in a south westerly direction from the infested areas in the north eastern states and is causing defoliation to over 1,000,000 acres of valuable timber and recreational woodland. There is little doubt that by 1972 this insect will be found in West Virginia.

Vehicles, particularly travel camp trailers, have been the innocent transporters of various life stages of this insect. To try to alert persons using our State's camping facilities to the possibility of transporting the Gypsy moth we prepared a brochure detailing the life history of the insect, it's distribution in the United States and how it can be moved on trailers and campers. These were placed in all State parks and other tourist areas.

JAPANESE BEETLE

In a continuing effort to assist communities to combat this insect, which can be found in almost every area of the State, personnel from this Division have participated in eight community control programs this year. In all, 321 acres in Cross Lanes, New Martinsville, St. Albans, Scott Depot and Forest Hill were treated with Milky Disease spore dust at the rate of two pounds per acre. In addition to the technical advice we were able to supply, we contributed 165 pounds of spore dust and the applicators necessary to apply the dust. One colony of Tifia wasps, an insect predator of the Japanese beetle, was collected and released south of St. Albans near four residential areas that have previously been treated with spore dust.

NURSERY INSPECTION

During the fiscal year 199 nurseries, 286 nursery dealers, and 118 agents registered in compliance with the Plant Pest Act. In addition, 751 out-of-state nurseries and nursery dealers registered to do business in West Virginia.

All nurseries, nursery dealers and Christmas tree dealers were visited during the year with a total of over 800 visits or revisits being made for the purpose of examining nursery stock for insects and diseases or for regulatory purposes.

The most common plant pests encountered were scale insects, mites, aphids and borers. Diseases in the nursery were few but did include apple scab, powdery mildew, botrytis and stem canker of roses, chestnut blight, phomopsis twig blight of junipers and lophodermium needle cast on pines. Air pollution was not observed to have caused damage in any registered nursery, however the State Nursery Inspector was called upon to investigate several complaints of plant damage in Wetzel and Kanawha Counties and this damage was diagnosed as having been caused by air pollution.

A Nursery Newsletter is published monthly and an official list of registered and inspected nurseries is compiled annually. A listing of available West Virginia nursery stock is being compiled for distribution to nurserymen, landscape contractors, builders, etc. as a means of promoting the sale of State grown trees and shrubs.

OAK WILT
(Federal-State Cooperative)

The economic importance of oak to West Virginia is emphasized by the fact that nearly 75 per cent of the land area of the State is forested and the fact that over one-half of the commercial forest land in the State is covered by oaks.

The objective of the Oak Wilt Program is the control of Oak Wilt, Ceratocystis fagacearum, which is potentially the most dangerous disease that threatens the forests of West Virginia. The disease is controlled by the "deep-girdle method" which reduces the water content in the diseased and treated tree. The reduction of essential moisture prevents the fungus from fruiting and thus prevents its spread.

The State is divided into six districts for administrating control activities. Headquarters for these districts are located in Romney, Morgantown, Fayetteville, Charleston, Logan, and Parkersburg. During the season a total of 85 men and eight airplanes were utilized in the detection and control work.

The diseased tree suspects are located by aerial observers in low flying aircraft. The trees are marked and recorded by the observers on topographic maps. This information is related to the ground crews who then check the suspects and verify the aerial diagnosis. All oak trees that are positively identified as being infected with Oak Wilt are then treated by the "deep-girdle method."

Oak Wilt has been found in all but four of the State's 55 counties, namely Ohio, Brooke, Tucker, and Webster Counties.

During the fiscal year a total of 2,559 diseased trees were treated in 1,918 infection centers. These trees were located in 37 counties. The most heavily infested included Mineral, Pendleton, and Logan Counties.

POTATO WART
(Federal-State Cooperative)

A small area located between Thomas and Davis in Tucker County is the last known area in the United States where the fungus disease of potatoes known as Potato Wart exists.

Caused by the fungus Synchytrium endobioticum, Potato Wart is a serious plant disease that has caused the loss of entire potato crops in Europe.

In the United States the disease once caused severe damage to potatoes being grown in parts of Pennsylvania and Maryland as well as in the Thomas area of West Virginia. Eradication efforts by both Maryland and Pennsylvania were successful and by the early 1960's those States were declared to be free of the disease. The goal of this program is to eradicate the disease from West Virginia and hence from the United States.

The eradication program is carried out in cooperation with the West Virginia University, Plant Pathology Department and the U. S. Department of Agriculture, ARS. Potatoes susceptible to the disease are planted in areas known to have been affected years ago and in surrounding areas. If the disease is present it shows up on the harvested potatoes and the ground is then sterilized to kill off the fungus organisms. Potatoes must be grown free of disease symptoms for three consecutive years before an area is declared Wart free.

Except for three plots where disease had been found and treated we now consider the disease to be eradicated. The three remaining plots must produce wart free potatoes for three years before the program is completed. This means that by September 1973 if no additional disease is found this program will be finished and the United States can be considered free of Potato Wart Disease.

STEM RUST OF WHEAT CONTROL PROGRAM
(Federal-State Cooperative)

To control Puccinia graminis, the devastating fungus organism which causes stem rust on wheat, other small grains and grasses, it is necessary to eradicate the alternate host of this fungus. The alternate host plants which grow in West Virginia are Berberis canadensis, native barberry, and Berberis vulgaris, European barberry, and several exotic or hybrid forms of barberry which are found in nurseries or home ornamental plantings.

Berberis canadensis, native barberry, is the primary alternate host of the fungus disease in West Virginia. After eradication of the barberry bushes the fungus cannot complete an essential step in its life cycle, which takes place on the leaves of the barberry bush, and dies upon completion of the over-wintering stage on grain stubble and grasses.

Stem rust has, in previous years, reduced small grain yields as much as 90 per cent where barberry bushes were plentiful. Since the introduction of new and selective herbicides which kill barberry very effectively, the disease damage is being held to a minimum.

This year in West Virginia, 1,820,000 barberry bushes were eradicated from 37,760 acres by State and Federal workers. This barberry eradication work not only helps protect the valuable small grain crops grown locally and state-wide, but also aids in protecting the entire small grain industry as it reduces the chances for new and possibly more destructive strains of this disease to develop.

A special survey conducted by members of the Stem Rust Control Program indicates the small grain industry is presently entering a period of accelerated motivation. This is primarily due to the lifting of Federal restrictions on small grain growing and sales. More grain is expected to be exported to Japan and China in the near future and local feed mills are demanding more grain for livestock feed. This industry trend along with higher yields produced per acre emphasizes the importance of the Stem Rust Control Program in West Virginia.

WHITE PINE BLISTER RUST
(Federal-State Cooperative)

The objective of this program is the control of white pine blister rust, Conartium ribicola, throughout the native white pine range of West Virginia. Commercial white pine grows native in Grant, Hampshire, Hardy, Pendleton, Preston, Greenbrier, Pocahontas, Tucker, Mercer, Monroe, Raleigh, and Summers Counties. This serious disease of white pine is controlled by eradicating the alternate host (Ribes sp.) of this disease.

Eradication of the alternate host of white pine blister rust eliminates an important link in the life cycle of this disease, and thus prevents its continued development and spread to uninfected white pine.

During the fiscal year, Ribes eradication work was performed on 5,734 acres. This work resulted in the destruction of 15,183 Ribes bushes. An additional 91,715 acres were surveyed for quality white pine which would meet control standards, Ribes infested stands, and new areas of disease outbreaks.

The White Pine Blister Rust Program operates from headquarters located in Greenbank, West Virginia, and in Pipestem, West Virginia. This program's operational responsibility involves the protection of one-half million acres of State and private lands as well as the Monongahela National Forest. Approximately one-quarter million acres in this control area is presently producing white pine reliably estimated to have a value of over $7,000,000, and this average increases annually as new and improved forest management practices are employed.

SOUTHERN CORN LEAF BLIGHT

Aerial and ground surveys were conducted in late summer of 1970 to determine the prevalence and severity of the Southern Corn Leaf Blight caused by the fungus Helminthsporium maydis.

Losses from this disease ranged from 25 per cent to 100 per cent in the counties surveyed. The Kanawha and Ohio Valleys and the Hardy County area were the hardest hit. Late planted corn or open pollinated varieties were found to be relatively free of the disease. The overall loss to West Virginia corn growers was estimated to be 50 per cent.

MISCELLANEOUS SURVEYS
(In Cooperation with USDA-ARS)

Cereal Leaf Beetle

Surveys were made in the previously infested counties to determine the degree of infestation and damage caused by the insect. In addition, surveys in Monroe, Mercer, Raleigh, Summers, Jefferson, Morgan and Berkeley have shown the cereal leaf beetle now is established in these counties. This brings the total number of counties known to be infested to 50. Only the five south eastern counties, where little or no oats or wheat are grown, have not been found to be infested.

European Chafer

Visual and black light surveys indicate that this insect has not yet re-established itself in the State.

White Fringe Beetle

Surveys by USDA-ARS were negative again this year.

Golden Nematode

Soil samples taken from the one Nicholas County farm that is known to have received seed potatoes from the infested area in Steuben, New York were examined for cysts of this nematode with negative results.

Witchweed

Surveys by USDA-ARS were negative again this year.